



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Log P-395A

Date: February 22, 1990

In reply refer to: P-90-3 through P-90-5

Honorable Samuel T. Skinner
Secretary
U.S. Department of Transportation
400 Seventh St. S.W.
Washington, D.C. 20590

About 5:50 p.m. central daylight time on October 3, 1989, the United States menhaden¹ fishing vessel NORTHUMBERLAND, owned and operated by the Zapata Haynie Corporation (vessel owner), was backing and maneuvering in 9 to 11 feet of water when the stern of the vessel struck and ruptured an offshore 16-inch natural gas transmission pipeline owned by Natural Gas Pipeline Company of America (pipeline company). Natural gas under 835 pounds per square inch pressure was released. An undetermined source on board the vessel ignited the gas, and within seconds, the entire vessel was engulfed in flames. The fire on the vessel burned until 4:30 a.m. on October 4, when it burned itself out. Leaking gas from the pipeline also continued to burn until the flow of gas subsided and the fire self-extinguished about 6 a.m. on October 4. Eleven of fourteen crew members died as a result of the accident. The vessel was located about 1/2 mile offshore in the Gulf of Mexico (Gulf) and about 5 1/3 nautical miles west of the jetties at the entrance to Sabine Pass, Texas.

Within a few days following the accident, both the vessel owner and the pipeline company had divers survey the pipeline on either side of the accident location. Both diving reports indicate that the pipeline was exposed above the natural bottom and had varying amounts of marine growth on the remaining portions of exposed pipe. A marine biologist contracted by the Safety Board also examined the marine growth on the pipeline sections later recovered. The marine biologist estimated, on the basis of the type and extent of marine growth found, that some sections of the pipeline had been exposed above the natural bottom of the Gulf from 1 to 10 years.

¹ Menhaden is a herring-like fish about 8 inches in length and is found in shallow waters along the Gulf of Mexico and the Atlantic Ocean. Gross revenues from menhaden fishing are estimated at \$200 million per year.

The accident pipeline is an interstate transmission pipeline subject to the Department of Transportation's (DOT) natural gas pipeline safety standards in Part 192 of Title 49 of the Code of Federal Regulations (CFR). The pipeline was built in 1973 and as-built construction plans show that it was buried 8 1/2 to 10 feet below the natural bottom of the Gulf at the accident site. Current DOT pipeline safety regulations (49 CFR Parts 192 and 195) require, at the time of a pipeline's construction, a minimum burial depth of 3 feet when the water depth is 12 feet or less. Right-of-way permits for the pipeline's construction were required from both the Minerals Management Service (MMS) of the Department of the Interior (DOI) and the General Land Office of Texas because the pipeline crosses the Outer Continental Shelf (OCS) and Texas State waters.

The Safety Board conducted a public hearing concerning this accident on December 11 and 12, 1989, in Houston, Texas. Testimony on menhaden fishing vessel operations in the Gulf were provided by a representative of the vessel owner, a representative of a second company operating a fleet of menhaden fishing vessels, and a representative of the Louisiana Shrimping Association. The vessel owner estimated that 73 menhaden fishing vessels operate in the Gulf. According to the vessel owner, 80 to 90 percent of the menhaden are caught within 3 miles of shore, and 40 to 50 percent within 1 mile of shore. The second menhaden official reported similar percentages for his company. The shrimping association official estimated that the number of full- and part-time shrimping vessels operating in the Gulf is between 30,000 and 35,000. He also indicated that shrimp fishermen will trawl wherever shrimp can be found, including the near-shore areas. Although all three officials knew about and were generally aware of the presence of offshore pipelines in the Gulf of Mexico, they testified that it was their belief that all offshore pipelines in shallow waters are buried and do not pose a danger to marine vessels and their operations.

According to an official of the U.S. Geological Survey, coastal erosion and subsidence can be quite severe along the Gulf coast. Winter storms, hurricanes, and the placement of man-made structures such as jetties can accelerate the erosion and subsidence rates and lead to the removal of sediment covering a pipeline.

Testimony was also taken from representatives of the Office of Pipeline Safety (OPS) of the Research and Special Programs Administration, MMS, and the Pipeline Safety Group of the Railroad Commission of Texas. The OPS Southwest Region representative estimated there are about 130 offshore pipeline operators within the region. However, OPS does not maintain information on the number, type, and locations of offshore pipelines. MMS, which issues leasing permits and right-of-way permits on the OCS for offshore pipelines, estimated that there are nearly 18,000 miles of offshore oil and gas pipelines on the OCS of the Gulf. Of this total, 4,550 miles are regulated by MMS, and 13,300 miles are regulated by OPS. In addition to the pipelines regulated by OPS and MMS, there are an unknown number of offshore pipelines not subject to Federal jurisdiction. For example, the Railroad Commission of Texas, which regulates a portion of offshore pipeline systems originating within State waters, estimates there are 70 pipeline systems with 600 miles of pipeline under its jurisdiction. The Commission representative

had no estimates of the number of pipeline systems or miles of pipelines that are in Texas waters but not subject to the Commission's jurisdiction. Other Gulf coast states also have offshore pipeline systems located in state waters, and the extent of their jurisdiction was not discussed at the Safety Board's hearing.

OPS, MMS and the Texas Railroad Commission have requirements to bury certain offshore pipelines at the time of construction, although pipelines constructed before Federal requirements were in effect were not required to be and may not have been buried. Other OPS regulations also require that offshore pipelines be protected from ship anchors and fishing operations. MMS regulations authorize the regional supervisor to require a burial depth to reduce the likelihood that the pipeline may constitute a hazard to trawling operations or other uses. Regarding surveillance and inspection of offshore pipelines, representatives of all three agencies indicated they accept aerial surveillance and do not require pipeline operators to monitor the pipelines and verify that the original depth of cover is maintained throughout the service life of the pipeline. OPS and MMS officials acknowledged, however, that an unburied pipeline in shallow waters constitutes a hazard, and should be reburied if the condition is known by the operator. However, none of the officials for pipeline company, OPS, MMS or the Texas Railroad Commission could recommend an effective method to verify the amount of cover over existing buried pipelines.

Despite regulatory requirements to bury certain portions of offshore pipelines during their construction, the absence of regulations that require surveillance to verify that pipelines remain buried subjects the operators of marine vessels to potential danger, particularly in depths of water comparable to the draft of the vessel. According to the U.S. Geological Survey, erosion and subsidence are known to be severe along some areas of the Gulf coast; therefore, the chance that a buried pipeline will become exposed in the near-coastal areas is increased. The pipelines that were never required to be buried pose similar risks to marine vessel operations.

In addition to this accident, a Zapata Haynie vessel struck a submerged natural gas pipeline in 1981. Although the pipeline was ruptured, the natural gas was not ignited, and no one was injured. In 1987, the menhaden fishing vessel SEA CHIEF also struck and ruptured an offshore natural gas/liquids pipeline in Louisiana waters, resulting in a fire and the deaths of two members of the crew. OPS has indicated that since 1985 there have been 21 reported incidents in which marine vessels have damaged offshore pipelines, including the SEA CHIEF and NORTHUMBERLAND accidents.

Although the number of reported incidents involving offshore pipelines and marine vessels remains small compared to the estimated numbers of pipelines and commercial fishing and shrimping vessels, the Safety Board is concerned this may be a growing problem. Although only two of the incidents noted have involved a loss of life, both occurred within the last three years. Consequently, marine vessel operators cannot presume that offshore pipelines in water depths less than 12 feet are buried and their vessels, therefore, are protected.

The magnitude and urgency of the problem are unknown because of the lack of complete information about the number, type, and location of offshore pipelines in the Gulf of Mexico, and the lack of effective surveillance procedures to verify that offshore pipelines remain safely buried. The absence of regulations to require that burial depths be maintained for offshore pipelines increases the likelihood that other buried offshore pipelines may also become exposed above the natural bottom of the Gulf. The jurisdictional complexities among the various Federal and state agencies, and the applicability of existing regulations, create additional difficulties. Consequently, the potential danger to life and property from future accidents is impossible to estimate.

Although DOT does not have jurisdiction over many offshore pipelines in the Gulf, the Safety Board believes that the DOT, as the primary Federal agency responsible for pipeline safety, is best able to organize and coordinate an effort by Federal, state, and industry organizations to determine the danger of offshore pipelines to marine vessels, and to propose effective methods to inspect, maintain, and protect offshore pipelines. The Safety Board also believes that the DOI, as the primary agency for OCS development, should assist the DOT in this effort.

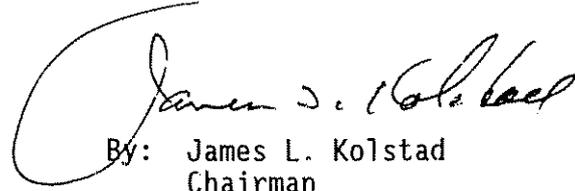
Therefore, the National Transportation Safety Board recommends that the Department of Transportation:

Issue an advisory notice or use other means to caution commercial fishing, shrimping, and other marine vessel operators in the Gulf of Mexico that submerged offshore pipelines may be unprotected on the ocean floor and that marine vessels can damage such pipelines and endanger their crews when operating in water depths comparable to a vessel's draft or when operating bottom dragging equipment. (Class I, Urgent Action) (P-90-3)

Identify, with the assistance of the Department of the Interior and other Gulf Coast States that may have jurisdiction, the type, number, location, and owner of all offshore pipelines in the Gulf of Mexico. (Class I, Urgent Action) (P-90-4)

Determine, with the assistance of the Department of the Interior, effective methods of inspection, maintenance, and protection for offshore pipelines located in the Gulf of Mexico to depths of water comparable to the maximum drafts of marine vessels that may operate outside of established sea lanes. (Class II, Priority Action) (P-90-5)

KOLSTAD, Chairman, COUGHLIN, Acting Vice Chairman, LAUBER, and BURNETT Members, concurred in these recommendations.



By: James L. Kolstad
Chairman